

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1-9. (Canceled)

10. (Currently Amended) An image processing method for projection transforming of an original image into a transformed image, the transformed image correcting distortion of the original image, the method comprising:

partitioning a whole area of the transformed image to be obtained by a projection transformation of the original image into a plurality of regions, wherein none of the regions is intersected by ~~any of two mutually perpendicular axes either a vertical axis or a horizontal axis, that extend the vertical and horizontal axes extending~~ in a plane containing the transformed image and ~~pass~~ ~~passing~~ through an origin ~~at a center of the whole area, at least one of the regions has a side of the region defined by one of the axes; area;~~

~~determining~~ determining, for each region of the plurality of regions defined in the whole area of the transformed image, a corresponding region in the original image that corresponds to each of the regions defined in the whole area of the transformed image; and

performing the projection transformation for each of the corresponding regions defined in the original image to obtain the transformed image.

11. (Currently Amended) The image processing method according to claim 10, wherein the partitioning step ~~further~~ comprises:

a first partitioning step for carrying out the partitioning at a predetermined size so that the whole area of the transformed image is partitioned into a plurality of first regions; and

a second partitioning step for further partitioning each of the first regions partitioned in the first partitioning step, ~~step that is intersected by one of the axes~~ into second

regions, ~~that is intersected by one of the axes~~, so that none of the second regions is intersected by any of the axes and ~~at least one of the second regions has a side of the second region defined by one of the axes~~.

wherein the determining step determines, based on the first regions and second regions, the corresponding regions in the original image.

12. (Currently Amended) The image processing method according to claim 10, wherein the partitioning step further comprises:

a first partitioning step for carrying out the partitioning at a predetermined size so that the whole area of the transformed image is partitioned into a plurality of first regions; and

a second partitioning step for changing the size of each of the first regions partitioned in the first partitioning step, into second regions, so that none of the second regions is intersected by any of the axes and ~~at least one of the second regions has a side of the second region defined by one of the axes~~.

wherein the determining step determines, based on the second regions, the corresponding regions in the original image.

13. (Currently Amended) An image processing device for projection transforming an original image into a transformed image, the transformed image correcting distortion of the original image, the device comprising:

partition means for partitioning a whole area of the transformed image to be obtained by a projection transformation of the original image into a plurality of regions, wherein none of the regions is intersected by ~~any of two mutually perpendicular axes~~ either a vertical axis or a horizontal axis, ~~that extend the vertical and horizontal axes extending in a plane containing the transformed image and pass~~ passing through an origin ~~at a center of the whole area~~, ~~at least one of the regions has a side of the region defined by one of the axes~~;

determination means for ~~determining~~ determining, for each region of the plurality of regions defined in the whole area of the transformed image, a corresponding region in the original image that corresponds to each of the regions defined in the whole area by the partition means; and

transformation means for performing the projection transformation for each of the corresponding regions determined by the determination device to obtain the transformed image.

14. (Currently Amended) A non-transitory computer-readable medium storing an executable program, the program, when executed, causing a computer to execute a process for projection transforming an original image into a transformed image, the transformed image correcting distortion of the original image, the executable program comprising:

partitioning a whole area of the transformed image to be obtained by a projection transformation of the original image into a plurality of regions, wherein none of the regions is intersected by ~~any of two mutually perpendicular axes~~ either a vertical axis or a horizontal axis, ~~that extend the vertical and horizontal axes extending~~ in a plane containing the transformed image and ~~pass~~ passing through an origin ~~at a center of the whole area, at least one of the regions has a side of the region defined by one of the axes; area;~~

~~determining~~ determining, for each region of the plurality of regions defined in the whole area of the transformed image, a corresponding region in the original image that corresponds to each of the regions defined in the whole area of the transformed image; and

performing the projection transformation for each of the corresponding regions defined in the original image to obtain the transformed image.

15. (Currently Amended) The image processing device according to claim 13, wherein the partitioning means ~~further~~ comprises:

a first partitioning means for carrying out the partitioning at a predetermined size so that the whole area of the transformed image is partitioned into a plurality of first regions; and

a second partitioning means for further partitioning each of the first regions partitioned by the first partitioning means, ~~means that intersect one of the axes~~ into second regions, ~~that intersect one of the axes~~, so that none of the second regions is intersected by any of the two axes and ~~at least one of the second regions has a side of the second region defined by one of the axes~~.

wherein the determining means determines, based on the first regions and second regions, the corresponding regions in the original image.

16. (Currently Amended) The image processing device according to claim 13, wherein the partitioning means ~~further~~ comprises:

a first partitioning means for carrying out the partitioning at a predetermined size so that the whole area of the transformed image is partitioned into a plurality of first regions; and

a second partitioning means for changing the size of each of the first regions partitioned by the first partitioning means, into second regions, so that none of the second regions is intersected by any of the ~~axes~~ and ~~at least one of the second regions has a side of the second region defined by one of the axes~~.

wherein the determining means determines, based on the second regions, the corresponding regions in the original image.

17. (Currently Amended) The non-transitory computer-readable medium according to claim 14, wherein the partitioning step ~~further~~ comprises:

a first partitioning step for carrying out the partitioning at a predetermined size so that the whole area of the transformed image is partitioned into a plurality of first regions; and

a second partitioning step for further partitioning each of the first regions partitioned in the first partitioning step, ~~step that intersect one of the axes~~ into second regions, ~~that intersect one of the axes~~, so that none of the second regions is intersected by any of the axes ~~and at least one of the second regions has a side of the second region defined by one of the axes~~.

wherein the determining step determines, based on the first regions and second regions, the corresponding regions in the original image.

18. (Currently Amended) The non-transitory computer readable medium according to claim 14, wherein the partitioning step ~~further~~ comprises:

a first partitioning step for carrying out the partitioning at a predetermined size so that the whole area of the transformed image is partitioned into a plurality of first regions; and

a second partitioning step for changing the size of each of the first regions partitioned in the first partitioning step, into second regions, so that none of the second regions is intersected by any of the axes ~~and at least one of the second regions has a side of the second region defined by one of the axes~~.

wherein the determining step determines, based on the second regions, the corresponding regions in the original image.

19. (Currently Amended) The image processing method according to claim 10, wherein

the partitioning step partitions the whole area of the transformed image by a plurality of lines extending in a direction parallel to ~~one of the two axes~~ the vertical axis and

a plurality of lines extending in a direction parallel to the other of the two axes.~~horizontal axis.~~

20. (Currently Amended) The image processing method according to claim 10, wherein

the partitioning step defines at least one region having a square ~~shape that has shape, the square shape having~~ one vertex located at the origin of the whole ~~area and that has two sides defined by the two axes.~~area.

21. (Currently Amended) The image processing method according to claim 10, wherein

the determining step determines the corresponding region in the original image by a reverse transformation of the region defined in the whole area of the transformed image.

22. (Previously Presented) The image processing method according to claim 10, wherein

the original image is captured by an image pickup device.

23. (Currently Amended) The image processing device according to ~~claim 11, claim 13~~, wherein

the partition means partitions the whole area of the transformed image by a plurality of lines extending in a direction parallel to ~~one of the two axes.~~the vertical axis and a plurality of lines extending in a direction parallel to the horizontal axis.

24. (Currently Amended) The image processing device according to claim 13, wherein

the partition means defines at least one region having a square ~~shape that has shape, the square shape having~~ one vertex located at the origin of the whole ~~area and that has two sides defined by the two axes.~~area.

25. (Currently Amended) The image processing device according to claim 13, wherein

the determination means determines the corresponding region in the original image by a reverse transformation of the region defined in the whole area of the transformed image.

26. (Previously Presented) The image processing device according to claim 13, wherein

the original image is captured by an image pickup device.

27. (Currently Amended) The non-transitory computer-readable medium according to claim 14, wherein

the partitioning step partitions the whole area of the transformed image by a plurality of lines extending in a direction parallel to ~~the axes~~ the vertical axis and a plurality of lines extending in a direction parallel to the horizontal axis.

28. (Currently Amended) The non-transitory computer-readable medium according to claim 14, wherein

the partitioning step defines at least one region having a square shape that ~~has shape, the square shape having~~ one vertex located at the origin of the whole area and that ~~has two sides defined by the two axes~~.

29. (Currently Amended) The non-transitory computer-readable medium according to claim 14, wherein

the determining step determines the corresponding region in the original image by a reverse transformation of the region defined in the whole area of the transformed image.

30. (Previously Presented) The non-transitory computer-readable medium according to claim 14, wherein

the original image is captured by an image pickup device.